WHAT IS CLAIMED IS:

1. An optical scanning device, comprising:

light source means;

deflecting means for deflecting a light beam emitted from said light source means; and

a scanning optical system for scanning a surface to be scanned, with the light beam deflected by said deflecting means;

wherein said scanning optical system includes a scanning optical element disposed so that, with respect to a sub-scan direction, a principal ray of the deflected light beam passes a portion other than an optical axis,

wherein said scanning optical element has a sagittal aspherical amount changing surface in which an aspherical amount of a sagittal changes along a main scan direction of said scanning optical element, and

wherein, throughout the whole surface to be scanned, the position in the sub-scan direction upon which the deflected light beam impinges is made even.

2. An optical scanning device according to Claim 1, wherein said scanning optical system is arranged so that, within an effective scan range upon the surface to be scanned, an amount of

deviation of the position in the sub-scan direction upon which the deflected light beam impinges is held to be not greater than 10 μm.

3. An optical scanning device according to Claim 1, wherein the light beam emitted from said light source means is incident on a plane, perpendicular to a rotational axis of said deflecting means, with a certain angle defined thereto.

4. An optical scanning device according to Claim 1, wherein, in the sub-scan direction, the position on the surface to be scanned, upon which a principal ray of the deflected light beam impinges, is made closer to the optical axis of said scanning optical system, as compared with the position where the principal ray passes through the surface of said scanning optical element which surface has a largest power.

5. An optical scanning device according to Claim 1, wherein said scanning optical system has one or more sagittal curvature radius changing surfaces in which a sagittal curvature radius changes along the main scan direction of said scanning optical system.

6. An optical scanning device according to Claim 1, wherein said scanning optical system consists of a single scanning optical element.

7. An optical scanning device according to Claim 1, wherein said scanning optical system has a power in the sub-scan direction which is equal to or approximately equal to a power of said sagittal aspherical amount changing surface.

8. An optical scanning device according to Claim 7, wherein, where the power of said scanning optical system in the sub-scan direction is ϕ_{so} and the power of said sagittal aspherical amount changing surface in the sub-scan direction is ϕ_{si}, a relation $0.9 \times \phi_{so} \leq \phi_{si} \leq 1.1 \times \phi_{so}$ is satisfied.

9. An optical scanning device according to Claim 1, wherein said light source means emits two or more light beams, and wherein, within the sub-scan sectional plane, a principal ray of at least one light beam passes an upper side with respect to the optical axis of said scanning optical system while a principal ray of at least one different light beam passes a lower side with respect to the optical axis of said scanning

optical system.

10. An optical scanning device according to Claim 1, wherein said deflecting means deflects plural light beams, wherein said scanning optical system includes a plurality of scanning optical elements for imaging the light beams deflected by said deflecting means, upon a plurality of surfaces to be scanned, which surfaces correspond to the light beams, respectively, and wherein said deflecting means is shared by plural scanning optical systems.

11. An optical scanning device according to Claim 1, wherein, where, within the main scan sectional plane, an air-converted distance from said deflecting means to a light exit surface of said scanning optical element along the optical axis is P1, a distance from the light exit surface of said scanning optical element to the surface to be scanned is P2, an air-converted distance from said deflecting means, being out of the axis, to the light exit surface of said scanning optical element is M1, and a distance from the light exit surface of said scanning optical element to the surface to be scanned is M2, the following relation is satisfied:

$$0.9\times\frac{P2}{P1}\leq\frac{M2}{M1}\leq 1.1\times\frac{P2}{P1}$$

12. An image forming apparatus, comprising:

an optical scanning device as recited in Claim 1;

a photosensitive member disposed at a position of the surface to be scanned as aforesaid;

a developing device for developing an electrostatic latent image formed on said photosensitive member with a light beam scanned with said optical scanning device, to produce a toner image;

a transfer device for transferring the developed toner image to a transfer material; and

a fixing device for fixing the transferred toner image on the transfer material.

13. An image forming apparatus, comprising:

an optical scanning device as recited in Claim 1; and

a printer controller for converting code data, inputted from an external equipment, into an imagewise signal and for applying the imagewise signal to said optical scanning device.

14. A color image forming apparatus, comprising:

at least one optical scanning device as recited in Claim 1; and

a plurality of image bearing members on which images of different colors are to be formed.

15. An apparatus according to Claim 14, further comprising a printer controller for converting a color signal, inputted from an external equipment, into imagewise data of different colors and for applying the imagewise data to corresponding optical scanning devices, respectively.

16. An optical scanning device, comprising:

light source means;

deflecting means for deflecting a light beam emitted from said light source means; and

a scanning optical system for scanning a surface to be scanned, with the light beam deflected by said deflecting means;

wherein said scanning optical system includes a scanning optical element arranged so that, upon the surface to be scanned and with respect to a sub-scan direction, imaging positions of two light beams being obliquely incident on a

plane, perpendicular to a rotational axis of said deflecting means, with certain oblique incidence angles γ and γ' ($0 \neq \gamma < \gamma'$), respectively, are approximately registered with each other.

17. An optical scanning device according to Claim 16, wherein said scanning optical element has an optical function with which, within an effective scan range upon the surface to be scanned, an amount of deviation of the position in the sub-scan direction upon which the two light beams impinge can be held to be not greater than 10 μm.

18. An optical scanning device according to Claim 16, wherein the scanning optical element is arranged so that, where a focal length of said scanning optical system in the sub-scan direction is fs, the spherical aberration in the sub-scan direction is not greater than 0.05fs, throughout the whole region where the oblique incidence angle of the light beam is not greater than γ.

19. An optical scanning device according to Claim 16, wherein said scanning optical element is disposed so that, with respect to the sub-scan direction, a principal ray of the light beam

deflected by said deflecting means passes a portion other than an optical axis, and wherein said scanning optical element has a sagittal aspherical amount changing surface in which an aspherical amount of a sagittal changes along a main scan direction of said scanning optical element.

20. An optical scanning device according to Claim 16, wherein said scanning optical element is disposed so that, with respect to the sub-scan direction, a principal ray of the light beam reflectively deflected by said deflecting means passes a portion other than an optical axis, and wherein said scanning optical element has a diffracting portion having an aspherical surface function in the sub-scan direction.

21. An optical scanning device according to Claim 16, wherein said scanning optical element has one or more sagittal curvature radius changing surfaces in which a sagittal curvature radius changes along the main scan direction of said scanning optical element.

22. An optical scanning device according to Claim 16, wherein said scanning optical system

consists of a single scanning optical element.

23. An optical scanning device according to Claim 19, wherein said scanning optical system has a refractive power in the sub-scan direction which is equal to or approximately equal to a refractive power of said sagittal aspherical amount changing surface.

24. An optical scanning device according to Claim 23, wherein, where the power of said scanning optical system in the sub-scan direction is ϕ_{so} and the power of said sagittal aspherical amount changing surface in the sub-scan direction is ϕ_{si}, a relation $0.9x\phi_{so} \leq \phi_{si} \leq 1.1x\phi_{so}$ is satisfied.

25. An optical scanning device according to Claim 16, wherein said scanning optical element is disposed so that, in the sub-scan direction, a principal ray of the light beam reflectively deflected by said deflecting means passes a portion other than an optical axis, and wherein, through bending of plural surfaces of said scanning optical element, spherical aberration in the sub-scan direction is corrected throughout the whole region where the oblique incidence angle is not greater than γ.

26. An optical scanning device according to Claim 16, wherein said light source means emits two or more light beams, and wherein, within the sub-scan sectional plane, a principal ray of at least one light beam passes an upper side with respect to the optical axis of said scanning optical element while a principal ray of another light beam passes a lower side with respect to the optical axis of said scanning optical element.

27. An optical scanning device according to Claim 16, wherein said deflecting means deflects plural light beams, wherein said scanning optical system includes a plurality of scanning optical elements for imaging the light beams deflected by said deflecting means, upon a plurality of surfaces to be scanned, which surfaces correspond to the light beams, respectively, and wherein said deflecting means is shared by plural scanning optical systems.

28. An optical scanning device according to Claim 16, wherein the oblique incidence angle γ satisfies a relation $0° < \gamma < 10°$.

29. An optical scanning device according to

Claim 16, wherein, where, within the main scan sectional plane, an air-converted distance from said deflecting means to a light exit surface of said scanning optical element along the optical axis is P1, a distance from the light exit surface of said scanning optical element to the surface to be scanned is P2, an air-converted distance from said deflecting means, being out of the axis, to the light exit surface of said scanning optical element is M1, and a distance from the light exit surface of said scanning optical element to the surface to be scanned is M2, the following relation is satisfied:

$$0.9\times\frac{P2}{P1}\le\frac{M2}{M1}\le 1.1\times\frac{P2}{P1}$$

30. An image forming apparatus, comprising:

an optical scanning device as recited in Claim 16;

a photosensitive member disposed at a position of the surface to be scanned as aforesaid;

a developing device for developing an electrostatic latent image formed on said photosensitive member with a light beam scanned with said optical scanning device, to produce a toner image;

a transfer device for transferring the developed toner image to a transfer material; and

a fixing device for fixing the transferred toner image on the transfer material.

31. An image forming apparatus, comprising:

an optical scanning device as recited in Claim 16; and

a printer controller for converting code data, inputted from an external equipment, into an imagewise signal and for applying the imagewise signal to said optical scanning device.

32. A color image forming apparatus, comprising:

at least one optical scanning device as recited in Claim 16; and

a plurality of image bearing members each being disposed at a position of the surface to be scanned with said optical scanning device, for bearing images of different colors to be formed thereon.

33. An apparatus according to Claim 32, further comprising a printer controller for converting a color signal, inputted from an external equipment, into imagewise data of

different colors and for applying the imagewise data to corresponding optical scanning devices, respectively.

34. An optical scanning device, comprising:

light source means;

deflecting means; and

optical scanning means;

wherein a plurality of light beams from said light source mans are directed to said deflecting means, and the plurality of light beams from said deflecting means are directed to corresponding surfaces, to be scanned, respectively, by said optical scanning means, and

wherein said optical scanning means includes a single scanning optical element having an anamorphic surface, and said scanning optical element has, within a main scan sectional plane, one surface which is an aspherical surface.

35. An optical scanning device according to Claim 34, wherein, in a sub-scan sectional plane, the plurality of light beams are obliquely incident upon a deflection surface of said deflecting means.

36. An optical scanning device according to

Claim 34, wherein at least one surface of said scanning optical element has an aspherical surface function with respect to the sub-scan direction.

37. An optical scanning device according to Claim 34, wherein said scanning optical element functions to direct the plurality of light beams from said deflecting means to the surfaces to be scanned, respectively.

38. An optical scanning device according to Claim 34, wherein one aspherical surface, in the main scan sectional plane, of said scanning optical element is the surface placed at the light entrance side.

39. An optical scanning device according to Claim 38, wherein the aspherical surface shape of the one aspherical surface, in the main scan sectional plane, of said scanning optical element has no inflection point in the curvature change.

40. An optical scanning device according to Claim 34, wherein said scanning optical element is an element made through plastic molding.

41. An optical scanning device according to

Claim 34, wherein said light source means comprises a multi-beam laser.

42. An optical scanning device according to Claim 34, wherein, where the power of said scanning optical element in the sub-scan direction is ϕ_{so} and the power of a light exit surface of said scanning optical element in the sub-scan direction is ϕ_{si}, a relation $0.9x\phi_{so} \leq \phi_{si} \leq 1.1x\phi_{so}$ is satisfied.

43. An optical scanning device according to Claim 34, wherein, where an air-converted distance from said deflecting means to a light exit surface of said scanning optical element along the optical axis is P1, a distance from the light exit surface of said scanning optical element to the surface to be scanned is P2, an air-converted distance from said deflecting means, being out of the axis, to the light exit surface of said scanning optical element is M1, and a distance from the light exit surface of said scanning optical element to the surface to be scanned is M2, the following relation is satisfied:

$$0.9\times\frac{P2}{P1} \leq \frac{M2}{M1} \leq 1.1\times\frac{P2}{P1}$$

44. An optical scanning device according to Claim 34, wherein, within the sub-scan sectional plane, the light entrance surface of said scanning optical element has a plane shape.

45. An image forming apparatus, comprising:

an optical scanning device as recited in Claim 34;

a photosensitive member disposed at a position of the surface to be scanned as aforesaid;

a developing device for developing an electrostatic latent image formed on said photosensitive member with a light beam scanned with said optical scanning device, to produce a toner image;

a transfer device for transferring the developed toner image to a transfer material; and

a fixing device for fixing the transferred toner image on the transfer material.

46. An image forming apparatus, comprising:

an optical scanning device as recited in Claim 34; and

a printer controller for converting code data, inputted from an external equipment, into an imagewise signal and for applying the

imagewise signal to said optical scanning device.

47. A color image forming apparatus, comprising:

at least one optical scanning device as recited in Claim 34;

wherein the or each optical scanning device functions to record imagewise information in relation to corresponding one of photosensitive members, corresponding to different colors, respectively.